

REMARKS

Claims 14, 18-20, 24, 25 and 27-29 are pending. By this Amendment, claims 14 and 24 are amended. Reconsideration in view of the above amendments and following remarks is respectfully requested.

Entry of the Amendment is proper under 37 C.F.R. §1.116 as the amendments:

(a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issues that would require further consideration and/or search as the amendments merely amplify issues previous discussed throughout prosecution; (c) do not add any claims without canceling a corresponding number of claims; and (d) place the application in better condition for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented as they are in response to arguments raised in the final rejection. Entry of the Amendment is thus respectfully requested.

Claims 14, 16, 20, 24, 27 and 28 were rejected under 35 U.S.C. §103(a) over EP 706 178 A2 (EP 178) in view of Japanese Patent Publication Number 59-151424 (JP 424). The rejection is respectfully traversed.

Claim 14 recites a method of bonding a first planar substrate to a second planar substrate by a bonding material in the form of a viscous fluid including controlling a thickness of a layer form on the first substrate to a predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm with respect to the first substrate, a rotary speed of a rotary drive, and a rotary speed of a rotary centrifugal drive in response to: (a) at least one of a temperature of the first substrate and a temperature of the second substrate, and (b) at least one of a temperature of the viscous fluid and a viscosity of the viscous fluid.

Claim 24 recites an apparatus for bonding a first planar substrate to a second planar substrate by a bonding material in the form of a viscous fluid, including a controller that controls a thickness of the layer to a predetermined thickness by controlling at least one of a

dosing pump, a position of a dosing arm, a rotary speed of a rotary drive, and a rotary speed of a rotary centrifugal drive in response to: (a) at least one of a temperature of the first substrate and a temperature of the second substrate, and (b) a temperature of the viscous fluid and a viscosity of the viscous fluid.

There is no disclosure or suggestion by either EP 178 or JP 424 of controlling a thickness of a layer formed on a first substrate to a predetermined thickness by controlling at least one of a dosing pump, a position of a dosing arm with respect to the first substrate, a rotary speed of a rotary drive, and a rotary speed of a rotary centrifugal drive in response to the temperature of the first substrate and/or the second substrate and a temperature and/or a viscosity of the viscous fluid. EP 178 discloses optimizing a thickness by the viscosity and the initial thickness of the resin and a rotation speed and time (column 12, lines 14-16), but does not disclose or suggest controlling a thickness in response to a temperature of the first and/or second substrate.

JP 424 discloses a temperature sensor 7 provided on a nozzle 4 and a temperature deviation of the resist is converted into a viscosity variation. A resist film of constant thickness can be obtained even when the temperature of the resist changes. However, JP 424 does not disclose or suggest controlling the thickness of the resist in response to a temperature of the substrate 5.

As neither EP 178 or JP 424 discloses suggest controlling the thickness of a layer of viscous fluid in response to a temperature of the first and/or second substrate, the combination will not result in the inventions of claims 14 and 24.

Claims 16, 20, 27 and 28 recite additional features of the invention and allowable for the same reasons discussed above with respect to claims 14 and 24 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection claims 14, 16, 20, 24, 27 and 28 are respectfully requested.

Claims 18, 19, 25 and 29 were rejected under 35 U.S.C. §103(a) over EP 178 in view JP 424 and further in view of EP 595749 A2 (EP 749). The rejection is respectfully traversed.

EP 749 fails to cure the deficiencies of EP 178 and JP 424 discussed above with respect to claims 14 and 24. Accordingly, even assuming it would have been obvious to combine EP 178, JP 424 and EP 749, the combination would not result in the invention of claims 14 and 24. Claims 18, 19, 25 and 29 recite additional features of the invention are allowable for the same reasons discussed above with respect to claims 14 and 24 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection of claims 18, 19, 25 and 29 are respectfully requested.

In view of the above amendments and remarks, Applicants respectfully submit that all of the claims are allowable and that the entire application is in condition for allowance.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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Attachment:

Appendix (pp. 7-8)

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APPENDIXVERSION WITH MARKINGS TO SHOW CHANGESIN THE CLAIMS:

Claims 14 and 24 are amended as follows:

14. (Thrice Amended) A method of bonding a first planar substrate to a second planar substrate by a bonding material in the form of a viscous fluid, comprising:

pumping the viscous fluid with a dosing pump to a dosing arm connected to the dosing pump and positioned over the first substrate;

forming a layer of the viscous fluid on the first substrate by dosing the first substrate with viscous fluid from the dosing arm;

rotating the first substrate with a rotary drive;

positioning the second substrate onto the layer of viscous fluid formed on the first substrate with a connecting means;

spinning off excess viscous fluid of the layer between the first substrate and the second substrate with a rotary centrifugal drive; and

controlling a thickness of the layer formed on the first substrate to a predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm with respect to the first substrate, a rotary speed of the rotary drive, and a rotary speed of the rotary centrifugal drive in response to: (a) at least one of a temperature of the first substrate[,] and a temperature of the second substrate[,]; and (b) at least one of a temperature of the viscous fluid[,] and a viscosity of the viscous fluid.

24. (Thrice Amended) An apparatus for bonding a first planar substrate to a second planar substrate by a bonding material in the form of a viscous fluid, comprising:

a pump that pumps the viscous fluid;

a dosing arm, connected to the pump and positioned over the first substrate, that doses the first substrate with the viscous fluid and forms a layer of the viscous fluid on the first substrate;

a plate that supports the first substrate;

a rotary drive that rotates the plate;

a connecting means that positions the second substrate onto the layer of viscous fluid formed on the first substrate;

a rotary centrifugal drive that spins off excess viscous fluid of the layer between the first substrate and the second substrate; and

a controller that controls a thickness of the layer to a predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm, a rotary speed of the rotary drive, and a rotary speed of the rotary centrifugal drive in response to: (a) at least one of a temperature of the first substrate[,] and a temperature of the second substrate; and (b) a temperature of the viscous fluid[,] and a viscosity of the viscous fluid.

End of Appendix.